Making a difference with robotics

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Students across Northern New Mexico are getting to grips with robotics as they prepare for the 2019 RoboRave competition in Española March 2, and more than 30 of them will be taking part because of the volunteer efforts of Laboratory employee Matt Williams.

Williams, who works in the Laboratory's computational physics division, volunteers around 15 hours a week to help seven teams at Carlos F. Vigil elementary in Española, and a new team at Santa Clara Pueblo's Kha'p'o Community School.

For the RoboRave event, teams from elementary to high school age build and prepare their robots to take part in challenges including navigating a maze, following a line and 'SumoBot' fighting.

"The biggest point I'd like my students to take away is that something can be both hard work and fun," says Williams. "There are times when robot building and programming are quite frustrating, but in the end the students really enjoy this work and are quite proud of what they accomplish."

For the maze challenge, students design, build and program a robot that can travel on a predetermined route, going forward and making turns at the right times to stay on the course. In SumoBot events, three autonomous robots fight to push each other out of a ring.

Williams' eighth-grade team from Carlos F. Vigil middle school.

Better than winning

In 2018, two of Williams' teams took part in the SumoBot finals at the RoboRave International event held in Albuquerque, with one team taking a third place medal.

But doing well at the competitions isn't the main goal. "Last year I had a student tell me 'I wasn't going to go to school this morning, but then I remembered that we have robotics today so I came to school for your class,'" says Williams. "I would rather hear a comment like that rather than win any championship at any level."

As well as learning and applying math and programming concepts, the students develop a range of other skills around teamwork, planning and critical thinking.

While Williams volunteers mostly on his own time, the Laboratory pays for employees like him to spend up to 32 hours of work time per calendar year volunteering in education and outreach activities through a U.S. Department of Energy program. Williams also appreciates the support of the Northern New Mexico Chapter of the American Society of Mechanical Engineers who help fund his teams.

“I love working with youth because the rewards can’t be measured. The enthusiasm and hard work I see the students put into building their robots just amazes me,” he says.